Effects of Teacher Related Factors on Students' Performance in Mathematics among Secondary Schools in Ondo West Local Government Area of Ondo State

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ABSTRACT: *This study was conducted to identify the effects of teacher related factors on the students performance in mathematics in some selected secondary schools in Ondo West Local Government Area of Ondo State. One hundred and twenty students drawn randomly from six secondary schools using a structured questionnaire and three hypotheses were generated and tested at 0.05 level of significance using t-test statistics. The results of the research findings indicated that teachers attitude towards the teaching of mathematics affect the performance of students, the use of action learning strategy/method for teaching Mathematics has positive influence on the performance of students and the use of experience teachers for the teaching of Mathematics also has positive influence on the performance of students*

Introduction

The knowledge of Mathematics is basic to science and technology. It is a pillar upon which scientific and technological advancement rest Popoola (2008). It serves the unique premise of being the foundation upon which all forms of the scientific discoveries are built. Akinsola (1994) opined that most of the scientific and technological discoveries are found to be mathematically oriented. Well equipped Mathematics laboratory presently has enormous impact on science and the society.

The Information Technology (IT) of today has transformed the world into a global village. The advancement in science and Technology is made possible by the numerous developments in pure mathematics. However, the need for sound knowledge of Mathematics is no longer restricted to Mathematicians, engineers and physicists. Biologists find statistics and biomathematics very statistics and biomathematics very useful in such topics as Mendelian Genetics.

The federal government seems to have realized this by staring its National Policy on Education (2004) that the aims of education is to inculcate in the child the spirit of enquiry and creativity through the nature.

In spite of all the advantages derived and the recognition given to Mathematics as one of the core subjects at all levels of education and as a pivot of technological and economical development. Evidence from the pasts has shown that there is general poor performance of students in Mathematics. Okebukola et al (1992) reported that data for WAEC shows that relative to many other subject, candidate are not performing as well in Science, Technology and Mathematics (STM) and that is why the performance level over the years show rising sports, there is clear discernible low level of performance in subjects with science Technology and Mathematics group.

Researchers like Ani (1993), Adebogun (2002), Ugwuanyi (2002) have catalog used the various factors responsible for the under achievement of students in both internal and public examination. These factors have been categories under the following headings;

1. Teachers related factors
2. Curricular related factors
3. Students related factors
4. Language related factors
5. Infrastructural related factors
6. Overpopulation in class

Based on this research, emphasis will be on the teacher related factors.

Teacher's related factors

On teacher related factors, issues like the attitude of teachers towards teaching of Mathematics, Teachers' method of teaching mathematics and the experience on the part of the mathematics teacher were discussed as follows;

Attitude of teachers towards the teaching of Mathematics. Teacher is a pillar upon which teaching and learning res (Popoola, 2008).hence, his behavior and attitude to work has great effect on the performance of student. Teachers suppose to be interested, competent, motivator. A good teacher must be enthusiastic and comfortable in the job. Lawrence (2010) opined that ever teacher has two basic sets of role to play. One set corresponds with the may or functions of instruction socialization and evaluation while the second set is concerned with motivating pupils, maintaining control generally creating an environment for learning.

Teacher Experience

The problem of unqualified Mathematics teachers and low enrolment of students in Mathematics and other related courses at the tertiary level of education, the teacher is a facilitator and emphasis in mathematics classroom teaching hinged oin the extent to which learning outcome is achieved. The present statistics show that there is one qualified or unqualified Mathematics teacher is 1 to 157 students (Popoola, 2004).

The problem can be addressed when continuous professional development of Mathematics teachers is made critically important by the government and private sectors. These include refresher courses, workshops, in-service training, seminars and conferences. Effective Mathematics teaching require a sound knowledge of subject matter or content, the learner and the methodology but if the Mathematics teachers lack these experience, the teaching-learning task become difficult and students are bound to perform poorly.

Teachers Method of Teaching Mathematics

Many scholars and researchers have investigated different methods or modes of teaching and their effects on performance in the various school subjects, Lawrence et al (2010). Weston and Cranton (1996) view instructional strategy as both the teaching method and the materials used in the process of teaching.

The use of wrong methodology in teaching has not only constituted problem in the teaching process but also in the way students perceived the subjects and this has affected their performance. According to Akpotu and Uwaham (2008), a good teacher should be able to use different methods such as lecture method, discussion, demonstration, project questioning, problem-solving method, action learning strategy, project method guided discover method.

But considering Mathematics, which is abstract in nature for the teacher to engage students actively in the class, there is a need for him to adopt the discussion method base on its advantage

Over the other methods. Abimbade (1999) refer to discussion as a method that is a participatory approach to teaching and learning wherein the teacher and the students' contributions are essential. It involves the raising of issues on both sides and seeking solutions based upon the participants' analysis for engaging in the discussion and the teacher is expected to be clearer at guiding the students without necessarily dominating the discussion.

An effective use of the method requires the teacher basing the set objectives of the discussion on the subject matter. A detailed discussion outline must be prepared, and then a step by step questions for each phase of the discussion set out.

A good discussion method must make provision for a well-arranged class, well-controlled, well managed discussion in which every student is allowed to participate to the maximum of his ability without domination by a few bright students. Hence, the federal ministry of education and Comparative Education Study and Adaptation Center (CESAC) now National Education Research and Development Council (NERDC) in developing National curriculum for senior secondary schools in Nigeria recommended the discussion method to schools as the instructional method due to its advantages.

Statement of the Problem

The problem of poor achievement in Mathematics is of great concern to Mathematics educators and relevant stakeholders in education. The chief examiner's report of the West Africa Examination Council (WAEC) examiner as recorded by the ministry of education (2010) observed the poor performance of students in Mathematics. Several reasons have been adduced as being responsible for the poor performance of students in Mathematics, but there seems to be no consensus of research findings as to what factors is responsible.

Among the reasons adduced for the poor performance f Mathematics. Teachers related factors,

curricular related factors, students related factors, language related factors, infrastructure related and overpopulation in class as contributing factors to the noticed poor performance, the teacher related factors seem to be the least studied. This study therefore to seek examined how the teachers related factors such as the attitude of the teacher to the teaching of Mathematics, teaching experience and teacher's methodology can affect student's performance in Mathematics.

Research Hypotheses

The following hypotheses were generated and tested.

Ho₁: There is no significant difference in performance between students taught by teachers with high attitude scores and those taught by teachers with low attitude scores.

Ho₂: There is no significant difference in performance between students taught by experienced Mathematics teachers and those taught by inexperienced Mathematics teachers.

Ho₃: There is no significant difference in performance between students taught with discussion method and those taught with other methods.

Research Methodology

This study employed the combination of descriptive survey and expo-facto design. The study population is made of SS II Mathematics students in Ondo West Local Government of Ondo State. Four secondary schools are independent Grammar School, Jubilee Grammar School, C.A.C Grammar School were selected for the study through stratified random sampling techniques. A total of 780 students with 20 students draw from each school were used for the study.

Two types of instruments were used for the study, they include the questionnaire and the SS II students last term results in their report sheet. The questionnaires are students and teachers questionnaire. The questionnaire was validated by Mathematics educators and experts in test and measurement. The questionnaire was tested for reliability using the test-retest method to obtain a reliability co-efficient of 0.88.

The t-test was used to test the three hypotheses generated for the study at 0.05 level of significance.

Results

Hypothesis 1

There is no significant difference in performance between students taught by teachers with high attitude scores and those with low attitude scores.

Table 1: T-test comparisons of test scores of students taught by high and how attitude teachers.

VARIABLE	N		SD	df	t_{-cal}	t_{-cri}	Decision
Low attitude	45	23.68	0.61				
High attitude	35	24.02	0.55	78	4.17	1.96	Rejected

p>0.05

Table 1 above present the t-test analyzing of the difference between students taught by teachers with high attitude scores and those with low attitude scores. The t-calculated 4.17 is greater than the t-table of 1.96 as a result of this the hypothesis is rejected. Therefore, there is a significant difference in student's performance by those taught by teachers with high and low attitude scores.

Hypothesis 2

There is no significant difference in performance between students taught by experienced and inexperience Mathematics teachers.

Table 2: t-test comparison of test scores of students taught by experience and inexperienced Mathematics teachers.

VARIABLE	N		SD	df	t_{-cal}	t_{-cri}	Decision
Experienced teacher	40	30.15	0.61				
Inexperienced Teacher	40	20.90	0.55	78	4.22	1.96	Rejected

P<0.05

Table 2 shows that the calculated t-value of 4.20 is higher than the critical value of 1.96 thus the hypothesis is rejected. Therefore, there is a significant difference in performance between student taught by experienced Mathematics teachers and those taught by inexperienced Mathematics.

Hypothesis 3

There is no significant difference between the performance of students taught with discussion on method and those taught with conventional method.

Table 3: T-test comparison of scores of students taught with discussion method and those taught with convention and method.

VARIABLE	N		SD	t_{-cal}	t_{-cri}	Decision
Discussion method	40	25.2	4.24			
Conventional method	40	19.17	5.15	4.4	1.96	Significant

Table 3 above shows that the calculated t-value of 4.4 is higher than the t-critical value of 1.96 thus the hypothesis is rejected. Therefore, there is a significant difference in performance of students taught by discussion method and those taught with conventional method.

Discussion of the Findings

The results obtained showed that there is a significant difference in achievement between students taught by Mathematics teachers that show high attitude towards the effective teaching of Mathematics over those that display low attitude towards the teaching of Mathematics. Students taught by the teacher with high attitude performed better. This is in agreement with Popoola (2008) who concluded that students tend to perform better when taught by teachers with high attitude. This study also reveals that there is a significance difference in performance between students taught by experienced teacher and those taught by inexperienced teachers. This finding is in line with Atuman and Idiegbe (2007) who carried out a similar research relating to the teaching of Mathematics in secondary schools and concluded that the more than years of experience of the teacher, the higher than level of effectiveness and the higher the performance of his students. The study also reveals that there is a significant difference between students taught with discussion method and those taught with conventional method. Students taught by teachers using discussion method perform better that students taught by teachers using conventional method.

This result also agree with the finding of Akpotu and Uwaham (2008) who affirmed that learning is more effective and students perform better when they are actively engaged in the learning process rather than attempting to receive knowledge passively.

Conclusion

The major conclusion that could be drawn from the study is that wrong attitude to teaching, inexperienced Mathematics teacher and wrong methodology of teaching by Mathematics teachers have negative influence on the performance of the students.

Recommendations

Based on the findings of this study, the following recommendations were made;
1. The teachers should be encouraged to teach effectively and develop a positive attitude towards the teaching of Mathematics
2. Mathematics teachers should make the learning interactive and engage the students in logical and critical thing and also solicit their contributions in the class.
3. Experienced teachers should be made to teach foundation classes to establish a sound foundation of the subject in the students.
4. Teachers need to go beyond the conventional "chalk and talk" method. They need to be updated in the use of instructional materials to enhance their teaching and make lessons more interesting meaningful and real to students'.

References
1. Abimbade, A. (1999). Principle and practice of Educational Technology Ibadan: international publishers limited. Page 55 – 82.
2. Adebogun, O .M. (2002). Sex and school location in primary school science achievement. Journal of Science Teacher Association. 25(1), 15 – 75.
3. Akinsola, M . K. (1994). Comparative effects of mastery learning and enhanced mastery learning strategies on students' achievement and self-concept in Mathematics. An unpublished Ph.D, thesis, university of Ibadan, Ibadan.
4. Akpotu, N . E. & Nwaham, C.O (2008). Introduction to the teaching profession in Nigeria. Agbor Royal pace publication.
5. Ani, R . O. (1993). Modification of people attitude towards Mathematics as an effective solution to sciences and Mathematics education in Nigeria. Journal of educational research, 6 (1 & 2). 102.
6. Atumah, I . O. & Ideigbe, G . O. (2001). Difficulties of teaching Physics in secondary schools fundamental constraints and prospect: An implication for the Physics teacher. A journal of the standardize of the Nigerian

academic 4(1), 62-65.

7. Atumah, I. & Enudi, S. (2004). Effective science teaching and evaluation in secondary schools, fundamental constraints and prospects. An implication for the science teacher. The Nigerian journal of education 3 (1), 52-57.

8. Lawrence, O. Atumah, Gilbert, O. Idiegbe and Walter, M. Umuz (2010). Effect of teacher related factors on students performance in physics among secondary schools in Sapele Local Government Area of Delta State. Nigerian journal of curriculum and instruction.16 (1), 90-94.

9. National Research Council (NRC) (2004). Inquiry and the national science education standards: A guide for teaching and learning Washington DC. National Academy Press.

10. Popoola, A . A. (2008). Focus conservation method and students mathematics achievement in secondary school. Pakistan Journal of social science 5(8), 20 – 26.